3GPP TSG RAN Meeting #20 **RP-030278**
Hameenlinna, FINLAND, 3 - 6 June 2003

Title: **Linked CRs (Rel-5) to TS 25.123, TS 25.225, TS 25.302 and TS 25.433 on non HS-DSCH power measurement**

Source: **TSG-RAN WG1**

Agenda item: **7.1.6**

1. Linked CRs (Rel-5) to **TS 25.123, TS 25.225, TS 25.302 and TS 25.433** on non HS-DSCH power measurement ()

RP Tdoc #	WG Toc#	Spec	CR	Rev	Subject	Phase	Cat	Curren	New V	Workitem	Remarks
RP-030278	R1-030419	25.225	070	-	Power Measurement in non HSDPA codes for TDD	Rel-5	F	5.4.0	5.5.0	HSDPA-Phys	
RP-030278	R2-031382	25.302	139	-	Power Measurement in non HSDPA codes	Rel-5	F	5.4.0	5.5.0	HSDPA	
RP-030278	R3-030559	25.433	834	-	HS-DSCH: Addition of non HS-DSCH power measurement for TDD.	Rel-5	F	5.4.0	5.5.0	HSDPA-IubIur	
RP-030278	R4-030411	25.123	302	-	Power Measurement in non HSDPA codes for TDD	Rel-5	F	5.4.0	5.5.0	HSDPA -RF	

3GPP TSG-RAN4 Meeting #27
Paris, France, 19 – 23 May 2003

Tdoc ⌘R4-030411

CR-Form-v7

CHANGE REQUEST

⌘ **25.123** **CR** **302** ⌘ **rev** **-** ⌘ Current version: **5.4.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☐

Title:	⌘	Power Measurement in non HSDPA codes for TDD
Source:	⌘	TSG RAN 4
Work item code:	⌘	HSDPA -RF
Date:	⌘	19/05/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Following the LS in R1-030033 (Power in all Non-HSDPA codes measurement), there is a need to define an appropriate UTRAN power measurement of non HSDPA codes for TDD.
Summary of change:	⌘	A new section has been added to 25.123 to define the measurement period, measurement accuracy and range of power in all non-HSDPA codes for TDD.
Consequences if not approved:	⌘	The RNC has no means to obtain information on the actual power used on HS-DSCH channels and non HS-DSCH channels for the purpose of RRM for TDD
Clauses affected:	⌘	9.2.2.3 (added)

	Y	N			
Other specs affected: ⌘	X		Other core specifications	⌘	25.433, 25.302, 25.225
		X	Test specifications		
		X	O&M Specifications		

Other comments: ⌘

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

9.2.2 Performance for UTRAN measurements in downlink (TX)

The output power is defined as the average power of the transmit timeslot, and is measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll off $\alpha = 0,22$ and a bandwidth equal to the chip rate.

9.2.2.1 Transmitted carrier power

The measurement period shall be 100 ms.

9.2.2.1.1 Accuracy requirements

Table 9.45 Transmitted carrier power accuracy

Parameter	Unit	Accuracy [% units]	Conditions
			Range
Transmitted carrier power	%	± 10	For 10% ≤ Transmitted carrier power ≤90%

9.2.2.1.2 Range/mapping

The reporting range for *Transmitted carrier power* is from 0 ... 100 %.

In table 9.46 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.46

Reported value	Measured quantity value	Unit
UTRAN_TX_POWER _000	Transmitted carrier power = 0	%
UTRAN_TX_POWER _001	0 < Transmitted carrier power ≤ 1	%
UTRAN_TX_POWER _002	1 < Transmitted carrier power ≤ 2	%
UTRAN_TX_POWER _003	2 < Transmitted carrier power ≤ 3	%
…	…	…
UTRAN_TX_POWER _098	97 < Transmitted carrier power ≤ 98	%
UTRAN_TX_POWER _099	98 < Transmitted carrier power ≤ 99	%
UTRAN_TX_POWER _100	99 < Transmitted carrier power ≤ 100	%

9.2.2.2 Transmitted code power

The measurement period shall be 100 ms.

9.2.2.2.1 Absolute accuracy requirements

Table 9.47: Transmitted code power absolute accuracy

Parameter	Unit	Accuracy [dB]	Conditions
			Range
Transmitted code power	dB	± 3	Over the full range

9.2.2.2.2 Relative accuracy requirements

The relative accuracy of transmitted code power is defined as the transmitted code power measured at one dedicated radio link compared to the transmitted code power measured from a different dedicated radio link in the same cell.

Table 9.48: Transmitted code power relative accuracy

Parameter	Unit	Accuracy [dB]	Conditions
			Range
Transmitted code power	dB	± 2	Over the full range

9.2.2.2.3 Range/mapping

The reporting range for *Transmitted code power* is from -10 ... 46 dBm.

In table 9.49 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.49

Reported value	Measured quantity value	Unit
UTRAN_CODE_POWER _010	-10,0 ≤ Transmitted code power < -9,5	dBm
UTRAN_CODE_POWER _011	-9,5 ≤ Transmitted code power < -9,0	dBm
UTRAN_CODE_POWER _012	-9,0 ≤ Transmitted code power < -8,5	dBm
…	…	…
UTRAN_CODE_POWER _120	45,0 ≤ Transmitted code power < 45,5	dBm
UTRAN_CODE_POWER _121	45,5 ≤ Transmitted code power < 46,0	dBm
UTRAN_CODE_POWER _122	46,0 ≤ Transmitted code power < 46,5	dBm

9.2.2.3 Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission

The measurement period shall be 100 ms.

9.2.2.3.1 Accuracy requirements

Table 9.50 Transmitted carrier power accuracy

Parameter	Unit	Accuracy [% units]	Conditions
			Range
Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission	%	± 10	For 10% ≤ Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission ≤90%

9.2.2.3.2 Range/mapping

The reporting range for *Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission* is from 0 ... 100 %.

In table 9.51 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.51

Reported value	Measured quantity value	Unit
UTRAN_NON_HSDPA_TX_POWER_000	Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission = 0	%
UTRAN_NON_HSDPA_TX_POWER_001	0 < Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission ≤ 1	%
UTRAN_NON_HSDPA_TX_POWER_002	1 < Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission ≤ 2	%
UTRAN_NON_HSDPA_TX_POWER_003	2 < Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission ≤ 3	%
...	...	...
UTRAN_NON_HSDPA_TX_POWER_098	97 < Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission ≤ 98	%
UTRAN_NON_HSDPA_TX_POWER_099	98 < Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission ≤ 99	%
UTRAN_NON_HSDPA_TX_POWER_100	99 < Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission ≤ 100	%

3GPP TSG-RAN1 Meeting #32
Paris, France, 19 – 23 May 2003

Tdoc ⌘R1-030419

CR-Form-v7

CHANGE REQUEST

⌘ **25.225** **CR** **070** ⌘ **rev** **-** ⌘ Current version: **5.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ [-] ME [-] Radio Access Network [X] Core Network [-]

Title:	⌘	Power Measurement in non HSDPA codes for TDD
Source:	⌘	TSG RAN WG1l
Work item code:	⌘	HSDPA-Phys
Date:	⌘	19/05/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Following the LS in R1-030033 (Power in all Non-HSDPA codes measurement), there is a need to define an appropriate UTRAN measurement. This has already been done in FDD (25.215 CR 134r1); however the LS does not differentiate between the FDD and TDD modes hence a similar measurement should be defined for TDD
Summary of change:	⌘	A new section has been added to 25.225 to define a measurement of power in all non-HSDPA codes for TDD. The measurement is made on a per timeslot basis
Consequences if not approved:	⌘	Degraded RRM performance

Clauses affected:	⌘	5.2.16 added			
Other specs affected:	⌘	**Y** / **N**	Other core specifications	⌘	25.123, 25.433, 25.302
		X /	Other core specifications		
		/ **X**	Test specifications		
		/ **X**	O&M Specifications		
Other comments:	⌘				

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downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.2.16 Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission

Definition	Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission is the ratio between the total transmitted power of all codes not used for HS-PDSCH or HS-SCCH transmission in a specified timeslot on one DL carrier from one UTRAN access point, and the maximum transmission power possible to use on that DL carrier in the timeslot. Total transmission power of all codes not used for HS-PDSCH or HS-SCCH transmission is the sum of the mean power levels [W] of each of the codes not used for HS-PDSCH or HS-SCCH transmission in the specified timeslot on one carrier from one UTRAN access point. Maximum transmission power is the mean power [W] in the specified timeslot on one carrier from one UTRAN access point when transmitting at the configured maximum power for the cell. The measurement shall be possible on any timeslot and carrier transmitted from the UTRAN access point. The reference point for the transmitted carrier power measurement of all codes not used for HS-PDSCH or HS-SCCH transmission shall be the Tx antenna connector. In case of Tx diversity the transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission for each branch shall be measured and the maximum of the two values shall be reported to higher layers, i.e. only one value will be reported to higher layers.

3GPP TSG-RAN WG2 Meeting #36
Paris, France 19-23 May 2003

Tdoc ⌘R2-031382

CR-Form-v7

CHANGE REQUEST

⌘ **25.302** **CR** **139** ⌘**rev** **-** ⌘ Current version: **5.4.0** ⌘

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Proposed change affects: UICC apps⌘ [-] ME [ ] Radio Access Network [X] Core Network [-]

Title:	⌘	Power Measurement in non HSDPA codes
Source:	⌘	RAN WG2
Work item code:	⌘	HSDPA-L23
Date:	⌘	19 May 2003
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	Based on changes in 25.215 (RAN1#31) and proposed changes in 25.225, there is an introduction of "Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission." To be consistent with the specification, "9.3.25 Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission" is introduced in subclause 9.3 UTRAN Measurements.
Summary of change:	⌘	Addition of Subclause 9.3.25: "Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission."
Consequences if not approved:	⌘	Degraded RRM performance. Inconsistent specification with 25.215 and 25.225.

Clauses affected:	⌘	9.3.25			
Other specs affected:	⌘	**Y** / **N**	Other core specifications	⌘	25.225, 25.423, 25.433
		Y /	Other core specifications		
		/ **X**	Test specifications		
		/ **X**	O&M Specifications		
Other comments:	⌘	-			

9.3 UTRAN Measurements

...

9.3.25 Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission

Measurement	Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission
Source	L1 (Node B)
Destination	RRC (RNC)
Reporting Trigger	On-demand, periodic, Event-triggered
Description	Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission is the ratio between the total transmitted power of all codes not used for HS-PDSCH or HS-SCCH transmission on one DL carrier from one UTRAN access point, and the maximum transmission power possible to use on that DL carrier at this moment of time. For TDD mode, this is measured in specified timeslots.

3GPP TSG-RAN3 Meeting #36
Paris, France, 19th –23rd May, 2003

R3-030559

CR-Form-v7

CHANGE REQUEST

⌘ **25.433** **CR** **834** ⌘**rev** ⌘ Current version: **5.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☐

Title:	⌘	HS-DSCH: Addition of non HS-DSCH power measurement for TDD.
Source:	⌘	RAN3
Work item code:	⌘	HSDPA-IuBIur
Date:	⌘	19/05/03
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
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C *(functional modification of feature)*
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R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change:	⌘	The measurement for "Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission" that was approved for FDD mode needs to be included for TDD also given that it is possible to include both HSDPA channels and non-HSDPA channels in the same timeslot
Summary of change:	⌘	Modifies through the specification all FDD only references to the measurement and adds the proper references for the TDD measurement. Impact Analysis: Impact assessment towards the previous version of the specification (same release): This CR has isolated impact with the previous version of the specification (same release) because HSDPA only is affected. This CR has an impact under functional point of view. The impact can be considered isolated because the change affects one function namely HSDPA.
Consequences if not approved:	⌘	The RNC has no means to obtain information on the actual power used on HS-DSCH channels and non HS-DSCH channels for the purpose of RRM for TDD

Clauses affected:	⌘	9.2.1.11, 9.2.1.12, 9.2.1.43, 9.2.1.44, 9.3.6
Other specs	⌘	Y ☒ N ☐ Other core specifications ⌘ TS 25.225 v5.4.0 CR070

			TS 25.123 v5.4.0 CR302 TS 25.302 v5.4.0 CR139
affected:		**N**	Test specifications
		N	O&M Specifications
Other comments:	⌘		

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9.2.1.11 Common Measurement Type

The Common Measurement Type identifies which measurement that shall be performed.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Common Measurement Type			ENUMERATED (Received Total Wide Band Power, Transmitted Carrier Power, Acknowledged PRACH Preambles, UL Timeslot ISCP, Acknowledged PCPCH Access Preambles, Detected PCPCH Access Preambles, …, UTRAN GPS Timing of Cell Frames for UE Positioning, SFN-SFN Observed Time Difference, Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission)	"UL Timeslot ISCP" is used by TDD only, "Acknowledged PRACH Preambles", 'Acknowledged PCPCH Access Preambles', 'Detected PCPCH Access Preambles'~~, 'Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission'~~ are used by FDD only

9.2.1.12 Common Measurement Value

The Common Measurement Value shall be the most recent value for this measurement, for which the reporting criteria were met.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
CHOICE *Common Measurement Value*					–	
>Transmitted Carrier Power					–	
>>Transmitted Carrier Power Value	M		INTEGER (0..100)	According to mapping in [22] and [23]	–	
>Received Total Wide Band Power					–	
>>Received Total Wide Band Power Value	M		INTEGER (0..621)	According to mapping in [22] and [23]	–	
>Acknowledged PRACH Preambles				FDD Only	–	
>>Acknowledged PRACH Preamble Value	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>UL Timeslot ISCP				TDD Only	–	
>>UL Timeslot ISCP	M		INTEGER (0..127)	According to mapping in [23]	–	
>Acknowledged PCPCH Access Preambles				FDD Only	–	
>>Acknowledged PCPCH Access Preambles	M		INTEGER (0..15,…)	According to mapping in [22]	–	
>Detected PCPCH Access Preambles				FDD Only	–	
>>Detected PCPCH Access Preambles	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>Additional Common Measurement Values					–	
>>UTRAN GPS Timing of Cell Frames for UE Positioning					–	
>>>$T_{UTRAN-GPS}$ Measurement Value Information	M		9.2.1.64A		YES	ignore
>>SFN-SFN Observed Time Difference					–	
>>>SFN-SFN Measurement Value Information	M		9.2.1.53E		YES	ignore
>>Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission				~~FDD Only~~	–	
>>>Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission Value	M		INTEGER (0..100)	According to mapping in [22] and [23]	YES	ignore

9.2.1.43 Measurement Increase/Decrease Threshold

The Measurement Increase/Decrease Threshold defines the threshold that shall trigger Event C or D.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
CHOICE *Measurement Increase/Decrease Threshold*					–	
>Received Total Wide Band Power					–	
>>Received Total Wide Band Power	M		INTEGER (0..620)	Unit: dB Range: 0..62 dB Step: 0.1 dB	–	
>Transmitted Carrier Power					–	
>>Transmitted Carrier Power	M		INTEGER (0..100)	According to mapping in [22] and [23]	–	
>Acknowledged PRACH Preambles				FDD only	–	
>>Acknowledged PRACH Preambles	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>UL Timeslot ISCP				TDD only	–	
>>UL Timeslot ISCP	M		INTEGER (0..126)	Unit: dB Range: 0..63 dB Step: 0.5 dB	–	
>SIR					–	
>>SIR	M		INTEGER (0..62)	Unit: dB Range: 0..31 dB Step: 0.5 dB	–	
>SIR Error				FDD only	–	
>>SIR Error	M		INTEGER (0..124)	Unit: dB Range: 0..62 dB Step: 0.5 dB	–	
>Transmitted Code Power					–	
>>Transmitted Code Power	M		INTEGER (0..112,…)	Unit: dB Range: 0..56 dB Step: 0.5 dB	–	
>RSCP				TDD only	–	
>>RSCP	M		INTEGER (0..126)	Unit: dB Range: 0..63 dB Step: 0.5 dB	–	
>Round Trip Time				FDD only	–	
>>Round Trip Time	M		INTEGER (0..32766)	Unit: chips Range: 0 .. 2047.875 chips Step: 0.625 chips	–	
>Acknowledged PCPCH Access Preambles				FDD only	–	
>>Acknowledged PCPCH Access Preambles	M		INTEGER (0..15,…)	According to mapping in [22]	–	
>Detected PCPCH Access Preambles				FDD only	–	
>>Detected PCPCH Access Preambles	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>Additional Measurement Thresholds					–	
>> Transmitted carrier power of all codes not				~~FDD only~~	–	

used for HS-PDSCH or HS-SCCH transmission						
>>>Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission	M		INTEGER (0..100)	According to mapping in [22] and [23]	YES	reject

9.2.1.44 Measurement Threshold

The Measurement Threshold defines which threshold that shall trigger Event A, B, E, F or On Modification.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
CHOICE *Measurement Threshold*					–	
>Received Total Wide Band Power					–	
>>Received Total Wide Band Power	M		INTEGER (0..621)	According to mapping in [22] and [23]	–	
>Transmitted Carrier Power					–	
>>Transmitted Carrier Power	M		INTEGER (0..100)	According to mapping in [22] and [23]	–	
>Acknowledged PRACH Preambles				FDD only	–	
>>Acknowledged PRACH Preambles	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>UL Timeslot ISCP				TDD only	–	
>>UL Timeslot ISCP	M		INTEGER (0..127)	According to mapping in [23]	–	
>SIR					–	
>>SIR	M		INTEGER (0..63)	According to mapping in [22] and [23]	–	
>SIR Error				FDD only	–	
>>SIR Error	M		INTEGER (0..125)	According to mapping in [22]	–	
>Transmitted Code Power					–	
>>Transmitted Code Power	M		INTEGER (0..127)	According to mapping in [22] and [23]	–	
>RSCP				TDD only	–	
>>RSCP	M		INTEGER (0..127)	According to mapping in [23]	–	
>Rx Timing Deviation				Applicable to 3.84Mcps TDD only	–	
>>Rx Timing Deviation	M		INTEGER (0..8191)	According to mapping in [23]	–	
>Round Trip Time				FDD only	–	
>>Round Trip Time	M		INTEGER (0..32767)	According to mapping in [22]	–	
>Acknowledged PCPCH Access Preambles				FDD only	–	
>>Acknowledged PCPCH Access Preambles	M		INTEGER (0..15,…)	According to mapping in [22]	–	
>Detected PCPCH Access Preambles				FDD only	–	
>>Detected PCPCH Access Preambles	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>Additional Measurement Thresholds					–	
>>UTRAN GPS Timing of Cell Frames for UE Positioning					–	
>>>$T_{UTRAN-GPS}$ Measurement Threshold Information	M		9.2.1.64B		YES	reject
>>SFN-SFN Observed Time Difference					–	
>>>SFN-SFN Measurement Threshold	M		9.2.1.53C		YES	reject

Information						
>>Rx Timing Deviation LCR				Applicable to 1.28Mcps TDD Only	–	
>>>Rx Timing Deviation LCR	M		INTEGER (0..255)	According to mapping in [23]	YES	reject
>>Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission				~~FDD only~~	–	
>>>Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission	M		INTEGER (0..100)	According to mapping in [22] and [23]	YES	reject
>>HS-SICH reception quality				Applicable to TDD Only	–	
>>>HS-SICH reception quality	M		INTEGER (0..20)	According to mapping in [23]	YES	reject

```
-- ========================================
--  T
-- ========================================

T1 ::= ENUMERATED {v10,v20,v30,v40,v50,v60,v70,v80,v90,v100,v120,v140,v160,v200,v300,v400,...}

T-Cell ::= ENUMERATED {
    v0,
    v1,
    v2,
    v3,
    v4,
    v5,
    v6,
    v7,
    v8,
    v9
}

T-RLFAILURE ::= INTEGER (0..255)
-- Unit seconds, Range 0s .. 25.5s, Step 0.1s

TDD-ChannelisationCode ::= ENUMERATED {
    chCode1div1,
    chCode2div1,
    chCode2div2,
    chCode4div1,
    chCode4div2,
    chCode4div3,
    chCode4div4,
    chCode8div1,
    chCode8div2,
    chCode8div3,
    chCode8div4,
    chCode8div5,
    chCode8div6,
    chCode8div7,
    chCode8div8,
    chCode16div1,
    chCode16div2,
    chCode16div3,
    chCode16div4,
    chCode16div5,
    chCode16div6,
    chCode16div7,
    chCode16div8,
    chCode16div9,
    chCode16div10,
    chCode16div11,
    chCode16div12,
    chCode16div13,
    chCode16div14,
    chCode16div15,
```

```
    chCode16div16,
    ...
}

TDD-ChannelisationCodeLCR ::= SEQUENCE {
    tDD-ChannelisationCode          TDD-ChannelisationCode,
    modulation                      Modulation, -- Modulation options for 1.28Mcps TDD in contrast to 3.84Mcps TDD
    iE-Extensions                           ProtocolExtensionContainer { { TDD-ChannelisationCodeLCR-ExtIEs} }        OPTIONAL,
    ...
}

TDD-ChannelisationCodeLCR-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-DL-Code-Information ::= SEQUENCE (SIZE (1..maxNrOfDPCHs)) OF TDD-DL-Code-InformationItem

TDD-DL-Code-InformationItem  ::= SEQUENCE {
    dPCH-ID                             DPCH-ID,
    tdd-ChannelisationCode              TDD-ChannelisationCode,
    iE-Extensions                       ProtocolExtensionContainer { { TDD-DL-Code-InformationItem-ExtIEs} }      OPTIONAL,
    ...
}

TDD-DL-Code-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-DL-Code-LCR-Information ::= SEQUENCE (SIZE (1..maxNrOfDPCHLCRs)) OF TDD-DL-Code-LCR-InformationItem

TDD-DL-Code-LCR-InformationItem ::= SEQUENCE {
    dPCH-ID                             DPCH-ID,
    tdd-ChannelisationCodeLCR           TDD-ChannelisationCodeLCR,
    tdd-DL-DPCH-TimeSlotFormat-LCR      TDD-DL-DPCH-TimeSlotFormat-LCR,
    iE-Extensions                       ProtocolExtensionContainer { { TDD-DL-Code-LCR-InformationItem-ExtIEs} }     OPTIONAL,
    ...
}

TDD-DL-Code-LCR-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-DL-DPCH-TimeSlotFormat-LCR ::= CHOICE {
    qPSK                        QPSK-DL-DPCH-TimeSlotFormatTDD-LCR,
    eightPSK                    EightPSK-DL-DPCH-TimeSlotFormatTDD-LCR,
    ...
}

QPSK-DL-DPCH-TimeSlotFormatTDD-LCR ::= INTEGER(0..24,...)

EightPSK-DL-DPCH-TimeSlotFormatTDD-LCR ::= INTEGER(0..24,...)

TDD-DPCHOffset ::= CHOICE {
```

```
    initialOffset       INTEGER (0..255),
    noinitialOffset     INTEGER (0..63)
}

TDD-PhysicalChannelOffset ::= INTEGER (0..63)

TDD-TPC-DownlinkStepSize ::= ENUMERATED {
    step-size1,
    step-size2,
    step-size3,
    ...
}

TDD-TPC-UplinkStepSize-LCR ::= ENUMERATED {
    step-size1,
    step-size2,
    step-size3,
    ...
}

TransportFormatCombination-Beta ::= CHOICE {
    signalledGainFactors        SEQUENCE {
        gainFactor                  CHOICE {
            fdd                         SEQUENCE {
                betaC                       BetaCD,
                betaD                       BetaCD,
                iE-Extensions       ProtocolExtensionContainer { { GainFactorFDD-ExtIEs } }     OPTIONAL,
                ...
            },
            tdd                         BetaCD,
            ...
        },
        refTFCNumber                RefTFCNumber    OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { { SignalledGainFactors-ExtIEs } }                      OPTIONAL,
        ...
    },
    computedGainFactors             RefTFCNumber,
    ...
}

GainFactorFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

SignalledGainFactors-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-UL-Code-Information ::= SEQUENCE (SIZE (1..maxNrOfDPCHs)) OF TDD-UL-Code-InformationItem

TDD-UL-Code-InformationItem ::= SEQUENCE {
    dPCH-ID                             DPCH-ID,
    tdd-ChannelisationCode              TDD-ChannelisationCode,
```

```
    iE-Extensions                       ProtocolExtensionContainer { { TDD-UL-Code-InformationItem-ExtIEs} }      OPTIONAL,
    ...
}

TDD-UL-Code-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-UL-Code-LCR-Information ::= SEQUENCE (SIZE (1..maxNrOfDPCHLCRs)) OF TDD-UL-Code-LCR-InformationItem

TDD-UL-Code-LCR-InformationItem ::= SEQUENCE {
    dPCH-ID                             DPCH-ID,
    tdd-ChannelisationCodeLCR           TDD-ChannelisationCodeLCR,
    tdd-UL-DPCH-TimeSlotFormat-LCR      TDD-UL-DPCH-TimeSlotFormat-LCR,
    iE-Extensions                       ProtocolExtensionContainer { { TDD-UL-Code-LCR-InformationItem-ExtIEs} }     OPTIONAL,
    ...
}

TDD-UL-Code-LCR-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-UL-DPCH-TimeSlotFormat-LCR ::= CHOICE {
    qPSK                        QPSK-UL-DPCH-TimeSlotFormatTDD-LCR,
    eightPSK                    EightPSK-UL-DPCH-TimeSlotFormatTDD-LCR,
    ...
}

QPSK-UL-DPCH-TimeSlotFormatTDD-LCR ::= INTEGER(0..69,...)

EightPSK-UL-DPCH-TimeSlotFormatTDD-LCR ::= INTEGER(0..24,...)

TFCI-Coding ::= ENUMERATED {
    v4,
    v8,
    v16,
    v32,
    ...
}

TFCI-Presence ::= ENUMERATED {
    present,
    not-present
}

TFCI-SignallingMode ::= SEQUENCE {
    tFCI-SignallingOption       TFCI-SignallingMode-TFCI-SignallingOption,
    splitType               TFCI-SignallingMode-SplitType               OPTIONAL,
    -- This IE shall be present if the TFCI signalling option is split --
    lengthOfTFCI2               TFCI-SignallingMode-LengthOfTFCI2           OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { { TFCI-SignallingMode-ExtIEs} }                      OPTIONAL,
    ...
}
```

```
TFCI-SignallingMode-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCI-SignallingMode-LengthOfTFCI2 ::= INTEGER (1..10)

TFCI-SignallingMode-SplitType ::= ENUMERATED {
    hard,
    logical
}

TFCI-SignallingMode-TFCI-SignallingOption ::= ENUMERATED {
    normal,
    split
}

TFCI2-BearerInformationResponse ::= SEQUENCE {
    bindingID                                   BindingID,
    transportLayerAddress                       TransportLayerAddress,
    iE-Extensions                               ProtocolExtensionContainer { { TFCI2-BearerInformationResponse-ExtIEs} }   OPTIONAL,
    ...
}

TFCI2-BearerInformationResponse-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}


TFCI2BearerRequestIndicator ::= ENUMERATED {newBearerRequested}


TGD                 ::= INTEGER (0|15..269)
-- 0 = Undefined, only one transmission gap in the transmission gap pattern sequence


TGPRC               ::= INTEGER (0..511)
-- 0 = infinity


TGPSID              ::= INTEGER (1.. maxTGPS)

TGSN                ::= INTEGER (0..14)

TimeSlot ::= INTEGER (0..14)

TimeSlotDirection ::= ENUMERATED {
    ul,
    dl,
    ...
}

TimeSlotLCR ::= INTEGER (0..6)
```

```
TimeSlotStatus ::= ENUMERATED {
    active,
    not-active,
    ...
}

TimingAdjustmentValue ::= CHOICE {
    initialPhase        INTEGER (0..255),
    steadyStatePhase    INTEGER (0..1048575)
}

TimingAdvanceApplied ::= ENUMERATED {
    yes,
    no
}
-- For 1.28Mcps TDD TimingAdvanceApplied = No

ToAWE ::= INTEGER (0..2559)
-- Unit ms

ToAWS ::= INTEGER (0..1279)
-- Unit ms


Transmission-Gap-Pattern-Sequence-Information ::= SEQUENCE (SIZE (1..maxTGPS)) OF
    SEQUENCE {
        tGPSID          TGPSID,
        tGSN            TGSN,
        tGL1            GapLength,
        tGL2            GapLength   OPTIONAL,
        tGD             TGD,
        tGPL1           GapDuration,
        tGPL2           GapDuration OPTIONAL,
        uL-DL-mode      UL-DL-mode,
        downlink-Compressed-Mode-Method     Downlink-Compressed-Mode-Method     OPTIONAL,
            -- This IE shall be present if the UL/DL mode IE is set to "DL only" or "UL/DL"
        uplink-Compressed-Mode-Method       Uplink-Compressed-Mode-Method       OPTIONAL,
            -- This IE shall be present if the UL/DL mode IE is set to "UL only" or "UL/DL"
        dL-FrameType        DL-FrameType,
        delta-SIR1          DeltaSIR,
        delta-SIR-after1    DeltaSIR,
        delta-SIR2          DeltaSIR    OPTIONAL,
        delta-SIR-after2    DeltaSIR    OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { {Transmission-Gap-Pattern-Sequence-Information-ExtIEs} } OPTIONAL,
        ...
    }
```

```
Transmission-Gap-Pattern-Sequence-Information-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}


TransmissionGapPatternSequenceCodeInformation   ::= ENUMERATED{
   code-change,
   nocode-change
}

TransmittedCarrierPowerOfAllCodesNotUsedForHS-PDSCHOrHS-SCCHTransmissionValue ::= INTEGER(0..100)
-- According to mapping in [22] and [23]

Transmitted-Carrier-Power-Value ::= INTEGER(0..100)
-- According to mapping in [22]/[23]

Transmitted-Code-Power-Value ::= INTEGER (0..127)
-- According to mapping in [22]/[23]

Transmitted-Code-Power-Value-IncrDecrThres ::= INTEGER (0..112,...)

TransmissionDiversityApplied ::= BOOLEAN
-- true: applied, false: not applied

TransmitDiversityIndicator ::= ENUMERATED {
    active,
    inactive
}

TFCS ::= SEQUENCE {
    tFCSvalues                  CHOICE {
        no-Split-in-TFCI            TFCS-TFCSList,
        split-in-TFCI               SEQUENCE {
            transportFormatCombination-DCH      TFCS-DCHList,
            signallingMethod                    CHOICE {
                tFCI-Range                      TFCS-MapingOnDSCHList,
                explicit                            TFCS-DSCHList,
                ...
            },
            iE-Extensions                       ProtocolExtensionContainer { { Split-in-TFCI-ExtIEs } }              OPTIONAL,
            ...
        },
    ...
    },
    iE-Extensions       ProtocolExtensionContainer  { { TFCS-ExtIEs} }      OPTIONAL,
    ...
}

Split-in-TFCI-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}

TFCS-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCS-TFCSList ::= SEQUENCE (SIZE (1..maxNrOfTFCs)) OF
    SEQUENCE {
        cTFC                TFCS-CTFC,
        tFC-Beta        TransportFormatCombination-Beta     OPTIONAL,
        -- The IE shall be present if the TFCS concerns a UL DPCH or PRACH channel [FDD – or PCPCH channel].
        iE-Extensions       ProtocolExtensionContainer  { { TFCS-TFCSList-ExtIEs} }     OPTIONAL,
        ...
}

TFCS-TFCSList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCS-CTFC ::= CHOICE {
    ctfc2bit                            INTEGER (0..3),
    ctfc4bit                            INTEGER (0..15),
    ctfc6bit                            INTEGER (0..63),
    ctfc8bit                            INTEGER (0..255),
    ctfc12bit                           INTEGER (0..4095),
    ctfc16bit                           INTEGER (0..65535),
    ctfcmaxbit                          INTEGER (0..maxCTFC)
}

TFCS-DCHList ::= SEQUENCE (SIZE (1..maxNrOfTFCI1Combs)) OF
    SEQUENCE {
        cTFC                TFCS-CTFC,
        iE-Extensions       ProtocolExtensionContainer  { { TFCS-DCHList-ExtIEs} }      OPTIONAL,
        ...
}

TFCS-DCHList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCS-MapingOnDSCHList ::= SEQUENCE (SIZE (1..maxNrOfTFCIGroups)) OF
    SEQUENCE {
        maxTFCI-field2-Value        TFCS-MaxTFCI-field2-Value,
        cTFC-DSCH               TFCS-CTFC,
        iE-Extensions               ProtocolExtensionContainer  { { TFCS-MapingOnDSCHList-ExtIEs} }                   OPTIONAL,
    ...
}

TFCS-MapingOnDSCHList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCS-MaxTFCI-field2-Value ::= INTEGER (1..maxNrOfTFCI2Combs-1)
```

```
TFCS-DSCHList ::= SEQUENCE (SIZE (1..maxNrOfTFCI2Combs)) OF
    SEQUENCE {
        cTFC-DSCH               TFCS-CTFC,
        iE-Extensions               ProtocolExtensionContainer  { { TFCS-DSCHList-ExtIEs} }     OPTIONAL,
        ...
}

TFCS-DSCHList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TransportBearerRequestIndicator ::= ENUMERATED {
    bearerRequested,
    bearerNotRequested,
    ...
}

TransportFormatSet ::= SEQUENCE {
    dynamicParts            TransportFormatSet-DynamicPartList,
    semi-staticPart         TransportFormatSet-Semi-staticPart,
    iE-Extensions           ProtocolExtensionContainer  { { TransportFormatSet-ExtIEs} }        OPTIONAL,
    ...
}

TransportFormatSet-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TransportFormatSet-DynamicPartList ::= SEQUENCE (SIZE (1..maxNrOfTFs)) OF
    SEQUENCE {
        nrOfTransportBlocks         TransportFormatSet-NrOfTransportBlocks,
        transportBlockSize          TransportFormatSet-TransportBlockSize       OPTIONAL,
        -- This IE shall be present if the Number of Transport Blocks IE is set to a value greater than 0
        mode                        TransportFormatSet-ModeDP,
        iE-Extensions               ProtocolExtensionContainer  { { TransportFormatSet-DynamicPartList-ExtIEs} }      OPTIONAL,
        ...
    }

TransportFormatSet-DynamicPartList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-TransportFormatSet-ModeDP ::= SEQUENCE {
    transmissionTimeIntervalInformation     TransmissionTimeIntervalInformation     OPTIONAL,
    -- This IE shall be present if the Transmission Time Interval IE in the Semi-static Transport Format Information IE is set to “dynamic”
    iE-Extensions                           ProtocolExtensionContainer { {TDD-TransportFormatSet-ModeDP-ExtIEs} } OPTIONAL,
    ...
    }

TDD-TransportFormatSet-ModeDP-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
TransmissionTimeIntervalInformation ::= SEQUENCE (SIZE (1..maxTTI-count)) OF
    SEQUENCE {
        transmissionTimeInterval        TransportFormatSet-TransmissionTimeIntervalDynamic,
    iE-Extensions                       ProtocolExtensionContainer { { TransmissionTimeIntervalInformation-ExtIEs} }     OPTIONAL,
    ...
}

TransmissionTimeIntervalInformation-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TransportFormatSet-Semi-staticPart ::= SEQUENCE {
    transmissionTimeInterval            TransportFormatSet-TransmissionTimeIntervalSemiStatic,
    channelCoding                   TransportFormatSet-ChannelCodingType,
    codingRate                      TransportFormatSet-CodingRate               OPTIONAL,
    -- This IE shall be present if the Type of channel coding IE is set to 'convolutional' or 'turbo'
    rateMatchingAttribute           TransportFormatSet-RateMatchingAttribute,
    cRC-Size                        TransportFormatSet-CRC-Size,
    mode                            TransportFormatSet-ModeSSP  ,
    iE-Extensions                   ProtocolExtensionContainer { { TransportFormatSet-Semi-staticPart-ExtIEs} }       OPTIONAL,
    ...
}

TransportFormatSet-Semi-staticPart-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TransportFormatSet-ChannelCodingType ::= ENUMERATED {
    no-codingTDD,
    convolutional-coding,
    turbo-coding,
    ...
}

TransportFormatSet-CodingRate ::= ENUMERATED {
    half,
    third,
    ...
}

TransportFormatSet-CRC-Size ::= ENUMERATED {
    v0,
    v8,
    v12,
    v16,
    v24,
    ...
}

TransportFormatSet-ModeDP ::= CHOICE {
    tdd                 TDD-TransportFormatSet-ModeDP,
    notApplicable               NULL,
```

```
    ...
}

TransportFormatSet-ModeSSP ::= CHOICE {
    tdd             TransportFormatSet-SecondInterleavingMode,
    notApplicable               NULL,
    ...
}

TransportFormatSet-NrOfTransportBlocks ::= INTEGER (0..512)

TransportFormatSet-RateMatchingAttribute ::= INTEGER (1..maxRateMatching)

TransportFormatSet-SecondInterleavingMode ::= ENUMERATED {
    frame-rlated,
    timeSlot-related,
    ...
}

TransportFormatSet-TransmissionTimeIntervalDynamic ::= ENUMERATED {
    msec-10,
    msec-20,
    msec-40,
    msec-80,
    ...
}

TransportFormatSet-TransmissionTimeIntervalSemiStatic ::= ENUMERATED {
    msec-10,
    msec-20,
    msec-40,
    msec-80,
    dynamic,
    ...,
    msec-5
}

TransportFormatSet-TransportBlockSize ::= INTEGER (0..5000)

TransportLayerAddress ::= BIT STRING (SIZE (1..160, ...))

TSTD-Indicator ::= ENUMERATED {
    active,
    inactive
}

TUTRANGPS ::= SEQUENCE {
    ms-part     INTEGER (0..16383),
    ls-part     INTEGER (0..4294967295)
}

TUTRANGPSChangeLimit ::= INTEGER (1..256)
-- Unit chip, Step 1/16 chip, Range 1/16..16 chip
```

```
TUTRANGPSDriftRate ::= INTEGER (-50..50)
-- Unit chip/s, Step 1/256 chip/s, Range -50/256..+50/256 chip/s

TUTRANGPSDriftRateQuality ::= INTEGER (0..50)
-- Unit chip/s, Step 1/256 chip/s, Range 0..50/256 chip/s

TUTRANGPSAccuracyClass ::= ENUMERATED {
    accuracy-class-A,
    accuracy-class-B,
    accuracy-class-C,
    ...
}

TUTRANGPSMeasurementThresholdInformation ::= SEQUENCE {
    tUTRANGPSChangeLimit                    TUTRANGPSChangeLimit                    OPTIONAL,
    predictedTUTRANGPSDeviationLimit        PredictedTUTRANGPSDeviationLimit        OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { TUTRANGPSMeasurementThresholdInformation-ExtIEs} }    OPTIONAL,
    ...
}

TUTRANGPSMeasurementThresholdInformation-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TUTRANGPSMeasurementValueInformation ::= SEQUENCE {
        tUTRANGPS                       TUTRANGPS,
        tUTRANGPSQuality                TUTRANGPSQuality                OPTIONAL,
        tUTRANGPSDriftRate              TUTRANGPSDriftRate,
        tUTRANGPSDriftRateQuality       TUTRANGPSDriftRateQuality       OPTIONAL,
        iE-Extensions                   ProtocolExtensionContainer { {TUTRANGPSMeasurementValueInformationItem-ExtIEs} }    OPTIONAL,
        ...
}

TUTRANGPSMeasurementValueInformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TUTRANGPSQuality ::= INTEGER (0..255)
-- Unit chip, Step 1/16 chip, Range 0.. 255/16 chip

TypeOfError ::= ENUMERATED {
    not-understood,
    missing,
    ...
}
```